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[CA/CA]; 2099 Marine Drive, Oakville, Ontario L6L 1B8  
(CA). **GRIS, Alexander** [CA/CA]; R.R. #2, Proton Sta-  
tion, Ontario N0C 1L0 (CA).

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(74) Agent: **HOFBAUER, Patrick, J.**; Hofbauer Associates,  
Suite 205 North, 1455 Lakeshore Road, Burlington, On-  
tario L7S 2J1 (CA).

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(71) Applicant (*for all designated States except US*): **ENER-  
SAVE FLUID MIXERS INC.** [CA/CA]; 195 James Street  
South, Hamilton, Ontario L8P 3A8 (CA).

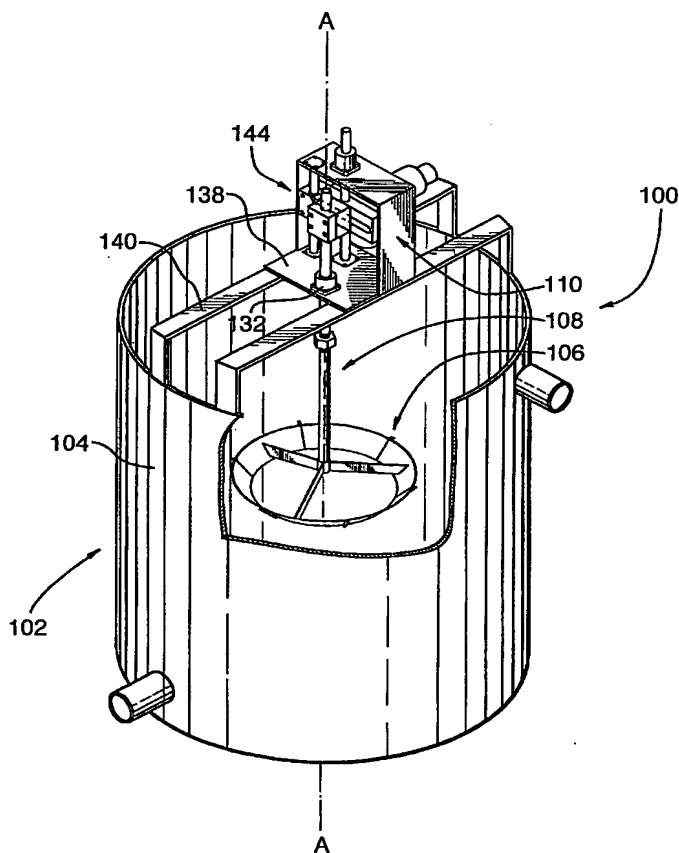
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(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **HAUGHTON, Gary**

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(54) Title: FLUID MIXING APPARATUS



(57) Abstract: A mixer apparatus for use with a vessel centered about a longitudinal axis is disclosed. The mixer has a blade body formed along a central head axis. The blade body has a first end, a second end spaced from the first end along the head axis, and a passageway extending between the first and second ends. The passageway tapers from the first end to the second end. The outer surface of the blade body defines an inside blade diameter "ID" at the second end and an outside blade diameter "OD" at the first end. The blade body is positioned within and coaxial to the vessel. A scotch yoke, operatively connected to the blade body by a shaft, effects reciprocating longitudinal movement of the blade body through a stroke "S", with a duration "T" for each stroke. Enhanced mixing efficiencies are achieved when the mixer is operated within a set of operational parameters defined by the equation:  $80 \leq 0.36 \times OD^2/ID^2 \times S/T \leq 550$ , when OD, ID and S are expressed in inches, and T is expressed in minutes.

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